

## TITLE: SANITARY WARE CAPABLE OF AUTOMATIC GENERATION AND CHARGE

### BACKGROUND OF THE INVENTION

#### (a) Technical Field of the Invention

5       The present invention relates to a kind of sanitary ware capable of  
automatic generation and charge, particularly to one that can supply power by  
way of an accumulator for instant great power use. The hydraulic generator  
can continue supplying power for use in sanitary ware and store surplus power  
in the accumulator. Given that the structure is simple and neat, and that the  
10   installation is easy, rendering the power consumption and the relevant cost can  
be relatively reduced, the invention is applicable to resident families, schools  
and public lavatories far away from cities and where not easy to receive power  
supply.

#### (b) Description of the Prior Art

15       The electrically controlled sanitary ware currently used, such as water  
heater of water-actuating-fire, urinal with a sensing flusher and an automatic  
water supply faucet for washbasin, is usually actuated by dry cells or adopted  
power. While dry cells require replacement after a period of time when the  
power has been consumed, the adopted power need additional cord  
20   installation, rendering considerable cost and troublesome installation, and

incidentally, the danger of electric shock. Meanwhile, in case the user lives in a remote district where power supply is not usually normal, it is worthy a consideration that the installation could be difficult, and that it might not be necessarily convenient to enjoy automatic flush on the urinal and automatic  
5 water supply from the faucet.

Therefore, the inventor of the present invention filed on February 27, 2001 an application (under Appln. No. 90202944) for "Micro Hydraulic Generator", which can be applied to the micro generating structure used in water heaters. By way of installation of said micro hydraulic generator in the  
10 water outlet conduit of the water heater, automatic actuating effect can be obtained, and thus overcoming the need of dry cells in conventional water heater of water-actuating-fire.

However, in view of the limitation in the volume of the power output from the micro hydraulic generator, and the incapability of supplying great  
15 power for the need of instant actuation of the magnetic valve, the micro hydraulic generator used to be applied to water heaters of water-actuating-fire without broadly utilized. Considering the inconvenience in power supply caused to those users living in remote districts, the inventor has devoted to development and improvement of the relevant device, in order to promote the  
20 living standard of the users living in remote districts, enabling them to enjoy

the convenience of using sanitary ware such as urinals with automatic flush and faucets with automatic power supply. Accordingly, by way of combining said prior art with the present invention, the purposes of automatic generation can be obtained, and the trouble of installing a power cord and the  
5 danger occurred by electric shock can be spared.

## SUMMARY OF THE INVENTION

The primary object of the invention is to provide an instant great power required by accumulators, while hydraulic generator can continue power supply and the surplus power generated by the generator can be stored in the  
5 accumulator. Accordingly, the integral structure is neat without the requirement of installation of electric cord, reducing the electricity consumed by the sanitary ware.

To obtain the above purposes, the sanitary ware capable of automatic generation and charge according to the invention comprises sanitary ware, a  
10 micro hydraulic generator and a charge control circuit.

The sanitary ware is interiorly provided with a load which has a magnetic valve connected to a water outlet conduit for controlling the supply or stop of water.

The micro hydraulic generator is associated to the water outlet conduit of  
15 the sanitary ware, which is composed of a water flow pipe element combined with a generator set and a regulating mechanism. The water flow pipe element is interiorly composed of a reservoir and exteriorly composed of inlet and outlet pipes and associated to a generator set provided with a magnetic ring. The reservoir can contain a flap axle accompanied with a magnetic ring.  
20 By way of the dash of the flowing water on the flap axle, the magnetic ring

provided in adaptation to the flap axle will generate magnetic actuation effect with the generator set, thereby generating power for regularly operating the magnetic valve.

The charge control circuit, being associated with the hydraulic generator, includes an accumulator, a rectifying diode, a zener diode for fixing the output voltage, and a limiting resistor. When the hydraulic generator is operating, the surplus power can be stored in the accumulator for use in the load of the magnetic valve when great power is required in instant actuation.

The foregoing object and summary provide only a brief introduction to the present invention. To fully appreciate these and other objects of the present invention as well as the invention itself, all of which will become apparent to those skilled in the art, the following detailed description of the invention and the claims should be read in conjunction with the accompanying drawings. Throughout the specification and drawings identical reference numerals refer to identical or similar parts.

Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the present invention showing application thereof to a urinal with a sensing flusher and an automatic water supply faucet.

Fig. 2 is a circuit diagram according to the present invention.

5 Fig. 3 is a cut-away view of the hydraulic generator according to the invention.

Fig. 3A is a cut-away view showing the combination of the charge control circuit and the micro hydraulic generator according to the invention.

10 Fig. 3B is a cut-away view of the charge control circuit according to the invention, presenting as an independent element provided on the micro hydraulic generator.

Fig. 4 is a circuit diagram of the switch circuit according to the invention.

Fig. 5 is a perspective view of the invention presenting as a water heater.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following descriptions are of exemplary embodiments only, and are not intended to limit the scope, applicability or configuration of the invention in any way. Rather, the following description provides a convenient

5 illustration for implementing exemplary embodiments of the invention.

Various changes to the described embodiments may be made in the function and arrangement of the elements described without departing from the scope of the invention as set forth in the appended claims.

Figs. 1 and 2 show an embodiment of the invention, which includes  
10 sanitary ware 1, a micro hydraulic generator 2 and charge control circuit 3.

The sanitary ware 1 is interiorly provided with a load 13, which has a magnetic valve 11 in association with a water outlet conduit for controlling the supply or stop of water.

Referring to Fig. 3, the micro hydraulic generator 2, being associated to  
15 the water outlet conduit, is composed of a housing 21 and a water flow pipe element formed by the inter-locking covers 22, 23. A generator set 24 and a regulating mechanism 25 are provided inside of the water flow pipe element. The water flow pipe element is interiorly composed of a reservoir 26 and exteriorly composed of a water inlet pipe 27 and a water outlet pipe 28.  
20 Besides, a generator set 24 provided with a magnetic ring 241 is further

associated with the exterior of the water flow pipe element. The interior reservoir 26 can contain a flap axle 29 accompanied with a magnetic ring 291. The regulating mechanism 25 is provided at the connection of the water inlet pile 27 and water outlet pipe 28. By way of the dash of the flowing water on the flap axle 29, the magnetic ring 291 provided in adaptation to the flap axle 29 will generate magnetic actuation effect with the magnetic ring 241 of the generator set 24, thereby generating power for regularly operating the load 13 of the magnetic valve 11 (as shown in Fig. 2).

In one preferred embodiment of the invention, a narrowed pipe end 271 is provided at the end of the water inlet pipe 27 such that the water flow will become speedy when going through it, such that when the smaller water flow goes into the water inlet pipe 27, the spout of high speed will dash on the flap axle 29 for generation purposes.

The charge control circuit 3 can be designed as being associated with and inside of the hydraulic generator 2 according the exact need (as shown in Fig. 3A). Alternatively, the charge control circuit 3 can be an independent element provided on the micro hydraulic generator 2 (as shown in Fig. 3B). As shown in Fig. 4, the charge control circuit 3 includes an accumulator 31, a rectifying diode 32, a zener diode 33 for fixing the output voltage, and a limiting resistor 34. When the hydraulic generator 2 is operating, the surplus



power can be stored in the accumulator 31 for use in the load 13 of the magnetic valve 11 when great power is required in instant actuation.

Accordingly, in the afore-mentioned structure, there are two ways to actuate the hydraulic generator 2:

5       As shown in Figs. 1 and 2, when applying the invention to sanitary ware 1 such as a urinal with sensing flusher, and a faucet with automatic water supply, a infrared sensor 12 is associated with the magnetic valve 11, appearing an automatic load (as shown Fig. 1). When the sensor 12 senses a human body, the accumulator 31 will be actuated and supply the power for the  
10       need of an instant actuation of the load 13. Subsequently, the hydraulic generator 2 will supply power for regular operation and charging the accumulator 31 with surplus power.

As shown in Figs. 4 and 5, the invention is applied to sanitary ware, wherein the charge control circuit 3 is further associated with a transistor 35  
15       and a switch circuit composed of two voltage dividing resistors 36, 37. When the water is on, the hydraulic generator 2 operates and the power reaches the standard, the switch circuit is through and therefore the accumulator 31 can provide the power for instant actuation for use on the load  
13 of the magnetic valve 11. Besides, the hydraulic generator 2 can continue  
20       supplying regular power and charging the accumulator 31 with surplus power.

In conclusion, the present invention has the following advantages:

1. The structure is simple and neat with the installation of electric cord.

Given the design of automatic generation and charge, it is specially convenient and applicable to resident families, schools and public lavatories in remote

5 districts where power supply is not easy to deliver.

2. The interiorly provided accumulator can supply instant great power, while the hydraulic generator can continue supplying power. Besides, as the surplus power from the generator can be stored in the accumulator, it is quite an efficient design.

10 Accordingly, what is disclosed in the invention can obtain the expected objects to provide sanitary ware capable of automatic generation and charge. As the invention is neat in terms of components and their assemblage, which is novel to the design of an engine actuator mechanism for the present remote control cars, and the efficiency is highly improved, the inventor has claimed

15 his invention.

It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

While certain novel features of this invention have been shown and

20 described and are pointed out in the annexed claim, it is not intended to be

limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.